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IS : 2187 - 1982

Indian Standard

SPECIFICATION FOR WOOL SOCKS

(Second Revision)

UDC 687·254·81 : 687·33

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MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
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AMENDMENT NO. 1 APRIL 1987

TO

IS:2187-1982 SPECIFICATION FOR WOOL SOCKS

(Second Revision)

[Page 8, Table 3, col 2 and 3, Sl No. vi(b) and (c)] - Substitute the following for the existing matter:

'b) Washing : Test 2

1) Change in colour	4 or better
2) Staining of adjacent fabric	4 or better

c) Perspiration:

1) Change in colour	4 or better
2) Staining of adjacent fabric	4 or better

(Page 8, clause 5.3) - Substitute the following for the existing clause:

'5.3 Fibre composition of the knitting, linking and splicing yarn used in the manufacture of socks of various blends shall be as under:

a) 85:15 Blend of wool and viscose rayon

Wool, percent	82 to 87
Viscose rayon, percent	Remainder

Note - Wool content up to 80 percent in an individual sample may be permitted if the average is within specified limits.

b) 70:15:15 Blend of wool, nylon and viscose rayon

Wool, percent	67-73
Nylon, percent	13-18
Viscose rayon, percent	13-17

Note - Wool content up to 65 percent and viscose rayon content up to 18 percent in an individual sample may be permitted if the average is within specified limits.

(TDC 15)

Indian Standard

SPECIFICATION FOR WOOL SOCKS

(Second Revision)

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(*Continued on page* 2)

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(*Continued from page* 1)

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Indian Standard

SPECIFICATION FOR WOOL SOCKS

(Second Revision)

0. FOREWORD

0.1 This Indian Standard (Second Revision) was adopted by the Indian Standards Institution on 15 February 1982, after the draft finalized by the Hosiery Sectional Committee had been approved by the Textile Division Council.

0.2 This standard, originally published in 1962, was first revised in 1973. The second revision has been taken up to modify the particulars of wool tops and to specify the courses per decimetre and tolerance on blend composition of yarn used in the manufacture of wool socks. A list of objectionable flaws which should not be present in the socks has also been included.

0.3 Assistance has been derived in the formulation of this standard from IND/TC 1623(G) ' Specification for socks, wool ', issued by the Ministry of Defence, Government of India.

0.4 Standards of Weights and Measures Act, 1976 stipulates the use of International System of Units in the country; in order to familiarize the industry with this system the recommended SI units for use in the textile industry are given in Appendix B.

0.5 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the constructional particulars and other details of wool socks, scoured/bleached, dyed or of mixture shades made from yarn spun on worsted system.

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*Rules for rounding off numerical values (*revised*).

1.2 This standard does not specify the design, type of finish, general appearance, lustre and feel of the socks (*see also* **5.5**).

2. TERMINOLOGY

2.1 For the purpose of this standard, the definitions given in IS : 3596-1967* shall apply.

3. MATERIALS

3.1 Yarn — The yarn used in the manufacture of the socks shall be spun on worsted system from wool only or blends of wool, nylon and viscose rayon in proportion as agreed to between the buyer and the seller. In the case of mixture shades the yarn shall be spun from dyed wool tops and nylon tops and undyed viscose rayon tops and for solid shades the dyed wool tops shall be blended with dyed nylon and viscose rayon tops.

NOTE — Double combing is likely to impart better finish and thorough blending of fibres.

3.1.1 The particulars of yarn commonly used for knitting, linking and splicing shall be as given in Table 1.

4. MANUFACTURE

4.1 In shape, the socks shall generally be as shown in Fig. 1. They shall be well knit, and shall be seamless with secure 4 course welt made either in one step or in two steps of two courses each. The top of the socks shall be knitted in 1 × 1 rib and the leg and foot portions shall be knitted plain.

4.1.1 The particulars of circular machines for knitting different sizes (*see* Table 2) of the socks are as follows:

Size No.	*Diameter of Machine*, cm	*Total Number of Needles in the Machine*
23	9·5	72
24	10·0	76
25	10·0	80
26	10·0	80
27	10·0	80
28	11·5	84
29	11·5	84
30	11·5	84
31	11·5	84

---

*Glossary of terms relating to hosiery.

TABLE 1 PARTICULARS OF KNITTING, LINKING AND SPLICING YARN

(*Clause* 3.1.1)

SL No.	FIBRE COMPOSITION		FIBRE LENGTH	GRADE OF WOOL TOPS/FIBRE FINENESS	APPROXIMATE COUNT		SINGLE THREAD BREAKING LOAD, *Min* (*see* NOTES 1 AND 2)	
	Fibre	Percent			Knitting and Linking Yarn	Splicing Yarn	Knitting and Linking Yarn	Splicing Yarn
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			mm				mN (gf)	mN (gf)
i)	Wool	100	80, *Min*	Not less than 48 s	80 tex × 3 (12·5 Nm/3)	80 tex (12·5 Nm)	10 250 (1 050)	2 350 (240)
ii)	Wool	85	80, *Min*	Not less than 48 s	80 tex × 3 (12·5 Nm/3)	80 tex (12·5 Nm)	10 250 (1 050)	2 350 (240)
	Viscose rayon	15	80–120	0·33 to 0·44 tex (3 to 4 denier)				
iii)	Wool	70	80, *Min*	Not less than 48 s	80 tex × 3 (12·5 Nm/3)	80 tex (12·5 Nm)	13 725 (1 400)	3 135 (320)
	Crimped nylon 6	15	80–120	0·33 to 0·44 tex (3 to 4 denier)				
	Viscose rayon	15	80–120	0·33 to 0·44 tex (3 to 4 denier)				

NOTE 1 — The breaking load of yarn shall be determined on a test length of 500 mm using a constant rate of traverse type machine at a rate of traverse of 300 ± 15 mm per minute.

NOTE 2 — The breaking load values of yarn removed from the knitted fabric shall not be less than 95 percent of the specified values.

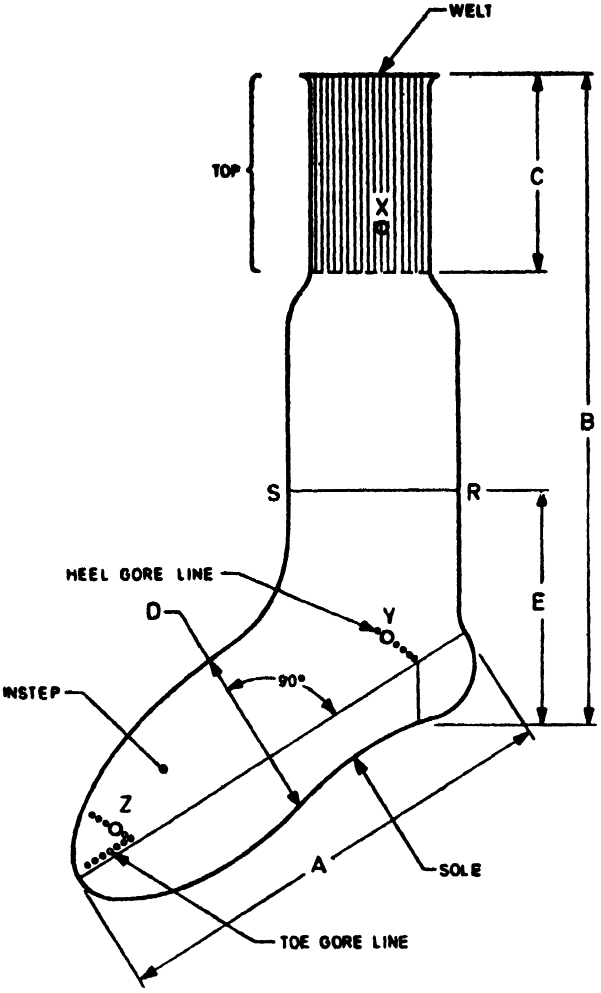

FIG. 1 A TYPICAL SOCK

4.2 The rib top and leg portions of the socks shall be joined by transferring loop for loop without sewing or seaming. The socks shall be spliced throughout the foot and the leg up to the portion marked in Fig. 1 (up to the line *SR* in the figure). The splicing shall be even, free from creases and folds, and similar in construction to the fabric of the socks. The socks shall be linked over the toe, and the linking shall be elastic, smooth and free from lumps and knots. The free ends of the linking yarn and other loose ends, if any, shall be between 13 mm and 25 mm in length and shall not pull out when the socks are stretched to the limit.

TABLE 2 DIMENSIONS AND MASS OF WOOL SOCKS

(*Clauses* 4.1.1, 5.1, *and Fig.* 1)

SIZE (1)	FOOT LENGTH (2)	LENGTH OF SOCK (3)	DEPTH OF RIB TOP PORTION (4)	WIDTH OF FOOT AT CENTRE (5)	LENGTH OF SPLICING (6)	MASS PER 10 PAIRS, *Min* (*see* NOTE) (7)
	A cm	*B* cm	*C* cm	*D* cm	*E* cm	g
23	23·0	28·0	10·0	9·5	13·0	850
24	24·0	29·0	10·0	10·0	13·0	920
25	25·0	30·0	10·0	10·0	13·0	1 000
26	26·0	31·0	11·0	10·0	13·0	1 060
27	27·0	32·0	11·0	10·0	14·0	1 130
28	28·0	33·0	11·0	11·5	14·0	1 200
29	29·0	33·0	12.0	11·5	14·0	1 270
30	30·0	34·0	12·0	11·5	14·0	1 340
31	31·0	34·0	12·0	11·5	14·0	1 410
Tolerance	±0·5	+2·5 −1	±1	±0·5	±0·5	—
Method of Test	A-2	A-2	A-2	A-2	A-2	A-3

NOTE — A tolerance of − 5 percent on the mass of the individual pair of the socks shall be permissible provided the average mass per ten pairs is maintained.

4.3 The socks shall be boarded to the size marked on them and pressed. They shall not be overboarded.

5. REQUIREMENTS

5.1 Dimensions and Mass — The socks shall conform to the requirements of Table 2 read with Fig. 1.

NOTE — The size of the socks is denoted by a number which is the numerical value of the foot length in centimetres.

Example:

30 size socks are the socks having foot length of 30 cm.

5.2 The socks shall also conform to the requirements given in Table 3.

TABLE 3 REQUIREMENTS OF WOOL SOCKS

(*Clause* 5.2)

Sl No.	Characteristic	Requirement	Method of Test
i)	Courses/dm	44 ± 2	A-4
ii)	Grade of wool tops	Not less than 48 s	IS : 5911-1977[*]
iii)	Dimensional change (due to relaxation), percent, *Max*		A-5
	Leg portion	3·0	
	Foot length	2·5	
iv)	pH value of acqueous extract	5·0 to 7·5	IS : 1390-1961[†] (Mild Method)
v)	Scouring loss, percent, *Max*	4	A-6
vi)	Colour fastness to:		
	a) Light	4 or better	IS : 686-1957[‡] or IS : 2454-1967[§]
	b) Washing : Test 2	4 or better	IS : 3361-1965[‖]
	c) Perspiration	4 or better	IS : 971-1956[¶]
	d) Rubbing	4 or better	IS : 766-1956[**]

Note — In case of dispute colour fastness to light shall be determined by IS : 686-1957[‡].

[*] Fineness grades of wool tops.

[†] Methods for determination of pH value of aqueous extracts of textile materials.

[‡] Methods for determination of colour fastness of textile materials to daylight.

[§] Method for determination of colour fastness of textile materials to artificial light (xenon lamp).

[‖] Method for determination of colour fastness of textile materials to washing: Test 2.

[¶] Method for determination of colour fastness of textile materials to perspiration.

[**] Method for determination of colour fastness of textile materials to rubbing.

5.3 Fibre Composition — The fibre composition of knitting, linking and splicing yarn used in the manufacture of socks shall be as agreed to between the buyer and the seller. However, a tolerance of $^{+1}_{-2}$ on the numerical value of the content in percentage of fibre other than wool shall be permitted. Balance percentage content shall be that of wool.

Note — In case of socks manufactured from 70 : 15 : 15 of wool, nylon and viscose rayon, the percentage of nylon and viscose rayon each shall be 13 to 16 and the balance shall be wool.

5.3.1 In case of wool-nylon socks, the blend composition, that is, amount of wool and nylon shall be determined according to IS : 2006-1978*. While in case of wool-nylon-rayon socks the percentage of wool fibres shall be determined according to IS : 2006-1978* and the percentage of nylon fibres in the residue according to IS : 2005-1962†. The percentage of viscose rayon fibres shall be calculated by the following formula:

$$Z = 100 - (X + Y)$$

where X, Y and Z are percentages of wool, nylon and rayon fibres respectively.

NOTE — The fibres present in the yarn should first be identified according to the method prescribed in IS : 667-1955‡. The sample to be analysed should be free from added and non-fibrous materials.

5.4 The socks shall be free from objectionable flaws. The objectionable flaws shall be those which strike immediately the eyes and shall be deemed to include:

a) Noticeable broken thread in the body,

b) Large mends,

c) Ladders,

d) Dropped stitches,

e) Noticeable oil or other stains,

f) Holes, cuts or tears extending beyond 6 mm square in area,

g) Uneven dyeing,

h) Streakiness, and

j) Any other defect which may significantly mar the appearance or serviceability of socks.

5.5 Sealed Sample — If, in order to illustrate or specify the indeterminable characteristics, such as general appearance, finish, shade and feel of socks a sample has been agreed upon and sealed, the supply shall be in conformity with the sealed sample in such respects.

5.5.1 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

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*Method for quantitative chemical analysis of binary mixtures of protein fibres and certain other fibres (*first revision*).

†Method for quantitative chemical analysis of binary mixtures of polyamide fibres and certain other fibres.

‡Simple methods for indentification of common commercial textile fibres.

6. PAIRING

6.1 The socks shall be matched and paired according to their shade and size. A tolerance of ± 15 mm on the length of the socks shall, however, be permissible while pairing.

7. MARKING

7.1 Each pair of the socks shall be marked with indelible ink with the following:

a) Name of the material, for example, wool socks;
b) Blend composition in the descending order;
c) Size;
d) Manufacturer's name, initials or trade-mark; and
e) Any other information as required by the buyer.

7.1.1 The socks may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

8. PRESERVATION

8.1 The socks shall be preserved with a heavy dose of naphthalene at a minimum quantity of 5 kg per cubic metre of the bale or case.

9. PACKING

9.1 The socks shall be packed according to IS : 3353-1966* or IS : 2518-1964† as the case may be.

9.2 Alternatively, the socks may be packed by the method given below, when specifically agreed to between the buyer and the seller:

'Each pair of socks shall be properly folded and 10 such pairs of the same size and shade, suitably preserved, shall be tied at 2 places with 3 ply jute twine or equivalent string to form a bundle.

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*Code for inland packing of wool hosiery yarn and goods.

†Code for seaworthy packing of wool hosiery yarn and goods.

Twenty-five bundles (250 pairs) shall then be arranged and wrapped with an inner layer of polyethylene film of 40 microns thickness (*see* IS : 2508 - 1963*) or kraft paper conforming to Grade 2 IS : 1397-1967† and outer layer of heavy cee cloth (*see* IS : 3751 - 1966‡) or equivalent hessian to form into a bale of rectangular shape. The bale shall be well pressed and made as compact as possible. The overlap of the inner layer shall be at least 10 cm to ensure full protection of the contents of the bale. The overlap of the outer layer shall be such that it can be appropriately and securely sewn around the bale. The outer layer of bale shall be stitched with 2 strand of 3 ply jute twine with at least 12 stitches/dm, taking care not to pierce the inner wrapping during stitching. The bale shall then be bound with at least two hoops of metal strip or wire in each direction around the length and width of the bale. The gross mass of the bale shall be approximately 37 kg.'

9.3 In order to ensure safety and prevent pilferage of the contents of the bale during transit and storage, the following precautions shall be taken at the time of packing:

a) Each hoop of metal strip shall be in one piece and the ends shall be sealed with a banding machine or securely riveted, and where banding machine is not available, the bales shall be properly and securely bound with wire.

b) The bale shall be bound with additional hoops of metal strip or wire if the dimensions of the bales exceed 60 cm in any of the directions so that no two hoops are more than 25 cm apart.

c) The seams of the bales shall be dammered with indelible ink or paint.

10. SAMPLING

10.0 The sampling procedure given below shall give desired protection to the buyer and the seller provided the lot submitted for inspection is homogenous. To achieve this the manufacturer shall maintain a system of process control at all stages of manufacture and shall ensure that the socks tendered by him for inspection comply with the requirements of this standard in all respects.

NOTE — For effective process control, the use of statistical quality control techniques is recommended and a helpful guidance may be obtained in this respect from IS : 397§.

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*Specification for low density polyethylene films (*first revision*).

†Specification for kraft paper (*first revision*).

‡Specification for heavy cee cloth.

§Method for statistical quality control during production:
(Part I)-1972 Control charts for variables (*first revision*).
(Part II)-1975 Control charts for attributes and count of defects (*first revision*).

10.1 Lot — In any consignment, all pairs of the socks of the same composition, colour and size shall constitute a lot.

10.1.1 The conformity of a lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from it.

10.2 Unless otherwise agreed to between the buyer and the seller, the number of pairs of socks, depending upon the size of the lot, shall be selected at random in accordance with col 2 of Table 4.

TABLE 4 NUMBER OF PAIRS OF SOCKS TO BE SELECTED FROM A LOT AND PERMISSIBLE NUMBER OF NON-CONFORMING PAIRS

NUMBER OF PAIRS IN THE LOT	NON-DESTRUCTIVE TESTING		DESTRUCTIVE TESTING	
	Number of Pairs to be Selected	Permissible Number of Non-conforming Pairs	Number of Pairs to be Selected	Permissible Number of Non-conforming Socks
(1)	(2)	(3)	(4)	(5)
Up to 50	10	1	2	0
51 to 100	20	2	2	0
101 „ 200	30	3	2	0
201 „ 300	40	3	3	0
301 „ 500	50	4	5	0
501 „ 800	70	6	7	1
801 „ 1 300	110	8	10	1
1 301 „ 3 200	150	10	15	1
3 201 and above	220	14	30	3

10.3 The sample size and the criterion for conformity for various characteristics shall be as follows:

Characteristics	*Sample Size*	*Criterion for Conformity*
Dimensions, courses per decimeter and freedom from defects	All the pairs selected according to col 2 of Table 4	Non-conforming pairs not to exceed the corresponding number given in col 3 of Table 4

(*Continued*)

Characteristics	*Sample Size*	*Criterion for conformity*
Mass	All the pairs selected according to col 2 of Table 3 and made into sets of 10 pairs each	Each observed value to satisfy the specified requirement
Specification for wool tops, dimensional change (due to relaxation), *p*H value, scouring loss, colour fastness to various agencies except light	One sock from each pair selected according to col 4 of Table 4	Non-conforming pairs not to exceed the corresponding number given in col 5 of Table 4
Colour fastness to light	One sock up to 500 pairs and two above that	Each observed value to satisfy the specified requirement

APPENDIX A

(*Tables* 2 *and* 3)

METHOD OF TEST

A-1. CONDITIONING OF TEST SPECIMENS AND ATMOSPHERIC CONDITIONS FOR TESTING

A-1.1 The test specimen shall preferably be conditioned for testing and tested in the standard atmosphere as given in IS : 6359-1971*.

A-2. DIMENSIONS

A-2.1 Procedure — Take each sock from the test sample. Lay it flat on a horizontal surface. Remove all creases and wrinkles without distorting the specimen. Measure correct to the nearest 5 mm, the dimensions given in Table 2.

A-3. MASS

A-3.1 Procedure — Take a set of 10 pairs of socks from the test sample (*see* **10.3**). Condition them to moisture equilibrium for 24 hours (*see* **A-1.1**) and weigh them to an accuracy of 10 g. Also determine the mass of individual pair of socks.

---

*Method for conditioning of textiles.

A-4. COURSES PER DECIMETRE

A-4.1 Procedure — Take one of the socks from the test sample (*see* **10.3**) and lay it flat on a table. Remove all creases and wrinkles without distorting it. Count with the help of a pick glass or a magnifying glass the total number of wales and courses per decimetre of the fabric at 5 places and determine the average.

A-5. DIMENSIONAL CHANGE DUE TO RELAXATION

A-5.1 Apparatus

A-5.1.1 *Watertight Tray* — of a suitable size, at least 10 cm deep.

A-5.1.2 *Graduated Steel Rule*

A-5.2 Marking of Test Specimens — As illustrated in Fig. 1, mark on each test specimen by means of indelible ink or fast-dyed cotton sewing thread, three points *X*, *Y* and *Z* such that:

a) all the three points are on the same wale,

b) point *X* is on the top portion,

c) point *Y* is on the heel gore line, and

d) point *Z* is on the toe portion of the sock.

NOTE — The colour of the indelible ink or sewing thread shall be in contrast with that of the sock so that it is easy to measure the distances.

A-5.3 Procedure

A-5.3.1 Take one of the socks from the test sample (*see* **10.3**). Place the specimen on a glass plate. Remove carefully all wrinkles and creases without distorting the specimen. Place another glass plate on the specimen. Measure correct to the nearest millimetre, the distance between *X* and *Y* and between *Y* and *Z*.

A-5.3.2 Lay the test specimen in flat position in a water tray and soak it under a head of 25 mm of water at room temperature for 2 hours. At the end of this period, without removing the specimen, drain the water from the tray and dry the specimen on a flat surface. Condition the specimen again in the standard atmosphere for 24 hours (*see* **A-1.1**).

NOTE — Wetting agent may be added to the water in the tray while soaking the specimen.

A-5.3.3 Measure again, correct to the nearest millimetre, the distance between X and Y and between Y and Z.

A-5.4 Calculation — Calculate, correct to one place of decimal, the percentage dimensional change between the points X and Y and between Y and Z by the formula given below:

$$\text{Dimensional change, percent } \frac{100\,(a-b)}{a}$$

where

a = distance between the two points X and Y, or Y and Z, before soaking; and

b = distance between the same points after soaking.

A-6. SCOURING LOSS

A-6.1 Test Specimen — Cut about 10 g of fabric from each test sample (*see* **10.3**). This shall constitute a test specimen.

A-6.2 Procedure

A-6.2.1 Dry the test specimen to a constant mass in the drying oven at 105 ± 3°C and determine its mass accurately.

NOTE — Constant mass shall be deemed to have been reached if the difference between any two successive weights at an interval of 20 minutes is less than 0·05 percent.

A-6.2.2 Extract the test specimen with a mixture of benzene and methyl alcohol, for four hours at the rate of traverse of 5 extractions per hour taking care to place the specimen in a thumble and covered with cotton wool previously extracted with the above said mixture of benzene and methyl alcohol, the solvent shall then be distilled off from the extract. Dry the residue to a constant mass (*see* Note under **A-6.2.1**) at 105 ± 3°C and determine its mass accurately.

A-6.3 Calculation — Calculate the scouring loss by the formula given below:

$$\text{Scouring loss, percent} = 100\,\frac{a}{b}$$

where

a = mass of the dry residue (*see* **A-6.2.2**), and

b = mass of the specimen before extraction (*see* **A-6.2.1**).

APPENDIX B

(*Clause* 0.4)

RECOMMENDED SI UNITS FOR TEXTILES

Sl No.	*Characteristic*	*SI Unit*		*Application*
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
1.	Length	Millimetre	mm	Fibres
		Millimetre, centimetre	mm, cm	Samples, test specimens (as appropriate)
		Metre	m	Yarns, ropes, cordage, fabrics
2.	Width	Millimetre	mm	Narrow fabrics
		Centimetre	cm	Other fabrics
		Millimetre, centimetre	mm, cm	Samples, test specimens (as appropriate)
		Centimetre, metre	cm, m	Carpets, druggets, *DURRIES* (as appropriate)
3.	Thickness	Micrometre (micron)	µm	Delicate fabrics
		Millimetre	mm	Other fabrics, carpets, felts
4.	Linear density	Tex	tex	Yarns
		Millitex	mtex	Fibres
		Decitex	dtex	Filaments, and filament yarns
		Kilotex	ktex	Slivers, ropes, cordage
5.	Diameter	Micrometre (micron)	µm	Fibres
		Millimetre	mm	Yarns, ropes, cordages

Sl No.	*Characteristic*	*SI Unit*		*Application*
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
6.	Circumference	Millimetre	mm	Ropes, cordage
7.	Threads in fabric:			Woven fabrics (as appropriate)
	a) Lengthwise	Number per centimetre Number per decimetre	ends/cm ends/dm	
	b) Widthwise	Number per centimetre Number per decimetre	picks/cm picks/dm	
8.	Warp threads in loom	Number per centimetre	ends/cm	Reeds
9.	Stitches in knitted fabric:			Knitted fabrics (as appropriate)
	a) Lengthwise	Courses per centimetre Courses per decimetre	courses/cm courses/dm	
	b) Widthwise	Wales per centimetre Wales per decimetre	wales/cm wales/dm	
10.	Stitch length	Millimetre	mm	Knitted fabrics, made-up itmes
11.	Mass per unit area	Grams per square metre	g/m^2	Fabrics
12.	Mass per unit length	Grams per metre	g/m	Fabrics

Sl No.	*Characteristic*	*SI Unit*		*Application*
		Unit	Abbreviation	
(1)	(2)	(3)	(4)	(5)
13.	Twist	Turns per centimetre	turns/cm	Yarns, ropes, cordage (as appropriate)
		Turns per metre	turns/m	
14.	Test or gauge length	Millimetre, centimetre	mm, cm	Fibre, yarn and fabric specimens (as appropriate)
15.	Breaking load	Millinewton	mN	Fibres, delicate yarns (individual or skeins)
		Newton	N	Strong yarns (individual or skeins), ropes, cordage, fabrics
16.	Breaking length	Kilometre	km	Yarns
17.	Tenacity	Millinewton per tex	mN/tex	Fibres, yarns (individual or skeins)
18.	Twist factor or twist multiplier	Turns per centimetre × square root of tex	$\text{turns/cm} \times \sqrt{\text{tex}}$	Yarns (as appropriate)
		Turns per metre × square root of tex	$\text{turns/m} \times \sqrt{\text{tex}}$	
19.	Bursting strength	Newton per square centimetre	N/cm^2	Fabrics

Sl No.	*Characteristic*	*SI Unit* Unit	 Abbreviation	*Application*
(1)	(2)	(3)	(4)	(5)
20.	Tear strength	Millinewton, newton	mN, N	Fabrics (as appropriate)
21.	Pile height	Millimetre	mm	Carpets
22.	Pile density	Mass of pile yarn in grams per square metre per millimetre pile height	g/m²/mm pile height	Pile carpets
23.	Elastic modulus	Millinewton per tex per unit deformation	mN/tex/unit deformation	Fibres, yarns, strands

INDIAN STANDARDS
ON
HOSIERY

IS:

833-1977	Gents' rib-knitted nylon stockings (*first revision*)
834-1975	Cotton yarn, grey, for hosiery (*second revision*)
2360-1977	Jerseys, Y-neck plain-knitted worsted (*second revision*)
2518-1964	Code for seaworthy packaging of wool hosiery yarn and goods
2522-1963	Knitted worsted mufflers
2523-1963	Worsted hose tops
2783-1969	Balaclave caps, plain-knitted (*first revision*)
3086-1965	Code for seaworthy packaging of cotton hosiery yarn and goods
3100-1980	Men's wool-cotton short drawers (*first revision*)
3325-1965	Code for inland packaging of cotton hosiery yarn and goods
3326-1966	Cotton stockinette
3329-1973	Socks cotton (*first revision*)
3330-1965	Wool cotton vests
3353-1966	Code for inland packing of wool hosiery yarn and goods
3530-1966	Rib-knitted cotton stockings
3555-1966	Cotton singlets, white with blue welting
3596-1967	Glossary of terms relating to hosiery
3604-1977	Jerseys, round neck, plain-knitted, worsted (*first revision*)
3617-1966	Gents' worsted pullovers, one-piece (interlock-knitted)
4044-1967	Gents' Slipovers
4046-1977	Gents' cotton knitted briefs (*first revision*)
4053-1967	Knitted puttees, dyed
4375-1967	Cotton knitted sports shirts
4376-1967	Plain-knitted gents' cotton short drawers
4582-1968	Ladies' cardigans
4809-1968	Cotton knitted string vests
4964-1980	Plain knitted cotton vests (*second revision*)
4965 (Part I)-1975	Interlock knitted cotton vests : Part I Fabric (*first revision*)
4965 (Part II)-1975	Interlock knitted cotton vests : Part II Vests (*first revision*)
5084-1969	Nylon socks
5085-1969	Berets, knitted, one piece
5450-1969	Gloves, knitted
5524-1969	Wool cotton underpants
7026-1973	Hosiery yarn, worsted
7747-1975	Hand-knitted wool yarn (worsted)
9469-1980	Plain knitted cotton fabric

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s^2
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m^2
Frequency	hertz	Hz	1 Hz = 1 c/s (s^{-1})
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m^2

INDIAN STANDARDS INSTITUTION

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